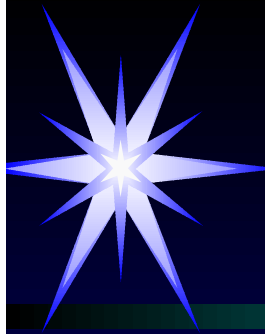




Air Force Tactical Missile Requirements

Major General Bruce Carlson
Director of Operational Requirements
HQ USAF/XOR



Joint Vision 2010

Provides Our Modernization Focus

The Goal of JV2010 is Full-Spectrum Dominance

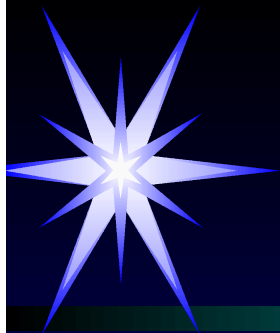
- **Modernization Must Deliver:**
 - **Systems Capable of Dominating the Battlespace**
 - **Lean Forces Capable of High Operations Tempo**
 - **Information Exploitation With Enemy Denial**
 - **Survivable, Offensive Systems Capable of Precise, All-weather, 24-hour a Day Employment**

**JV2010 is Dominant Capability Across
the Spectrum of Conflict**

Creating the Vision



“This Air Force Vision for the 21st Century ...was shaped by Joint Vision 2010, the new guidance published by the Chairman of the Joint Chiefs of Staff.”

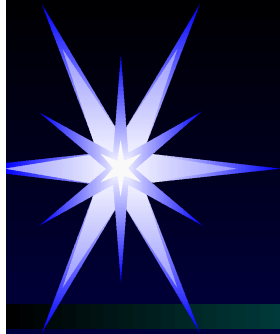


Air Force Core Competencies

- Air and Space Superiority
- Global Attack
- Precision Engagement
- Rapid Global Mobility
- Agile Combat Support
- Information Superiority

JV 2010 Operational Concept

**Full Dimensional Protection
Dominant Maneuver
Precision Engagement
Focused Logistics**

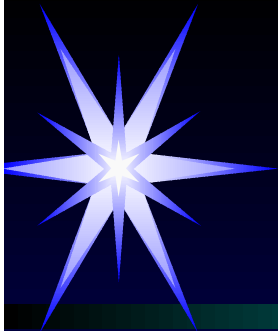


Making Global Engagement a Reality

Global Engagement Via a Structured Approach:

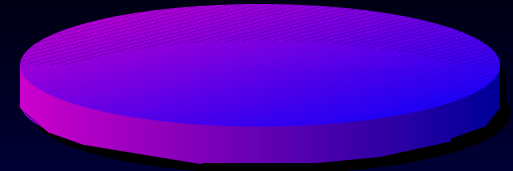


Results: Shaping the Victory



Quick Response:

Dominate Maneuver/Focused Logistics



- U.S. Air and Space Power Can Engage Anywhere, Any Time.. **Within Hours...**

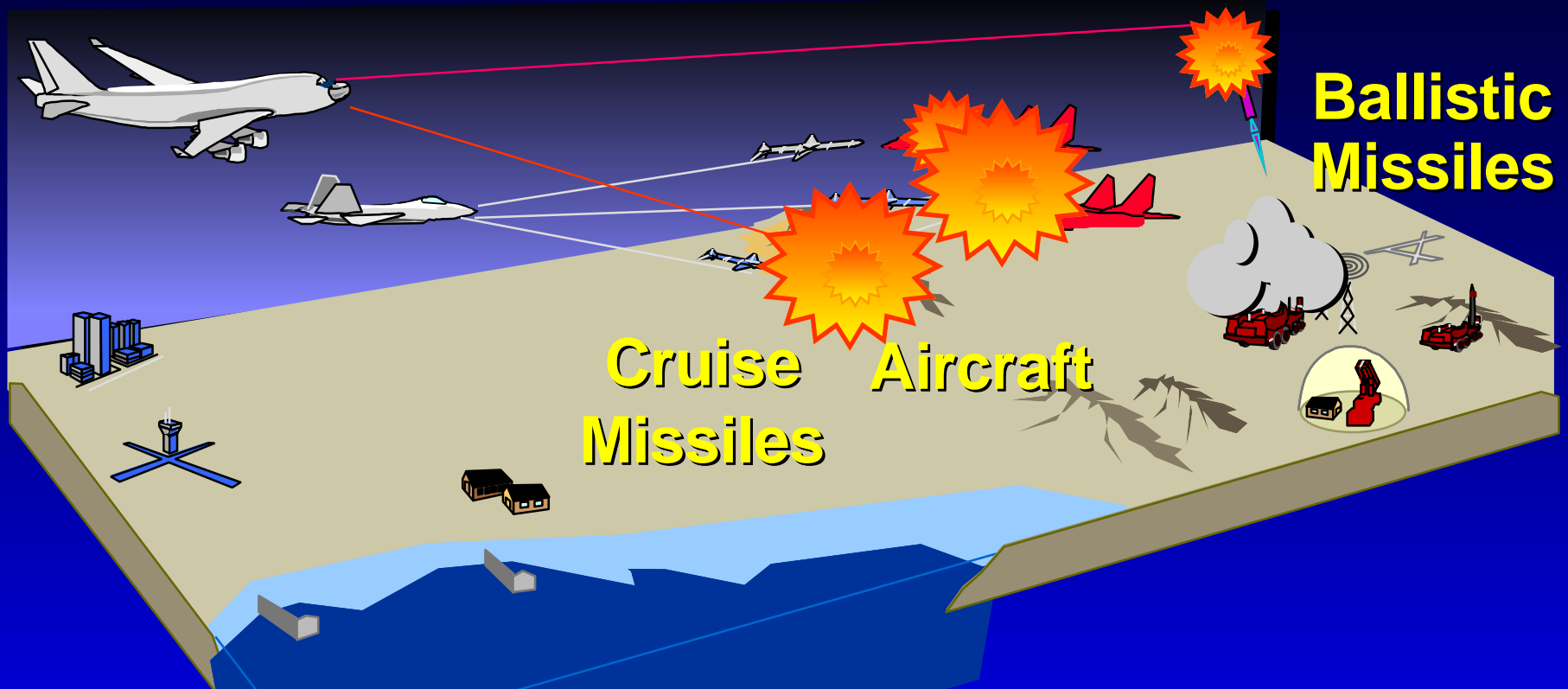


- A Force Designed to Provide CINCs;
 - Advanced Battlefield Preparation
 - Reduced Theater Footprint
 - Reach Back Information Capability
 - Rapid, Responsive, Reliable Systems
 - A Full Spectrum of Response Options



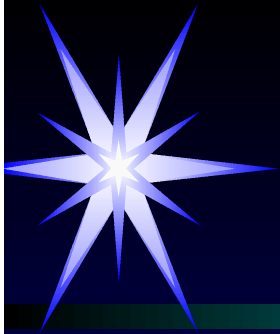
Own the Skies:

JV2010 Force Protection/Air and Space Superiority



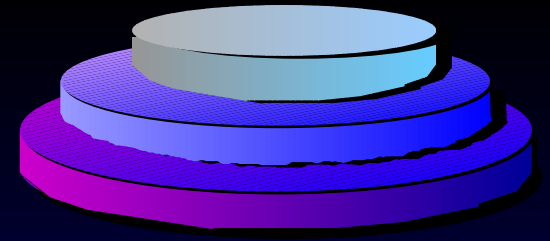
We Must Control the Air

Successful Follow-On Operations Depend On It

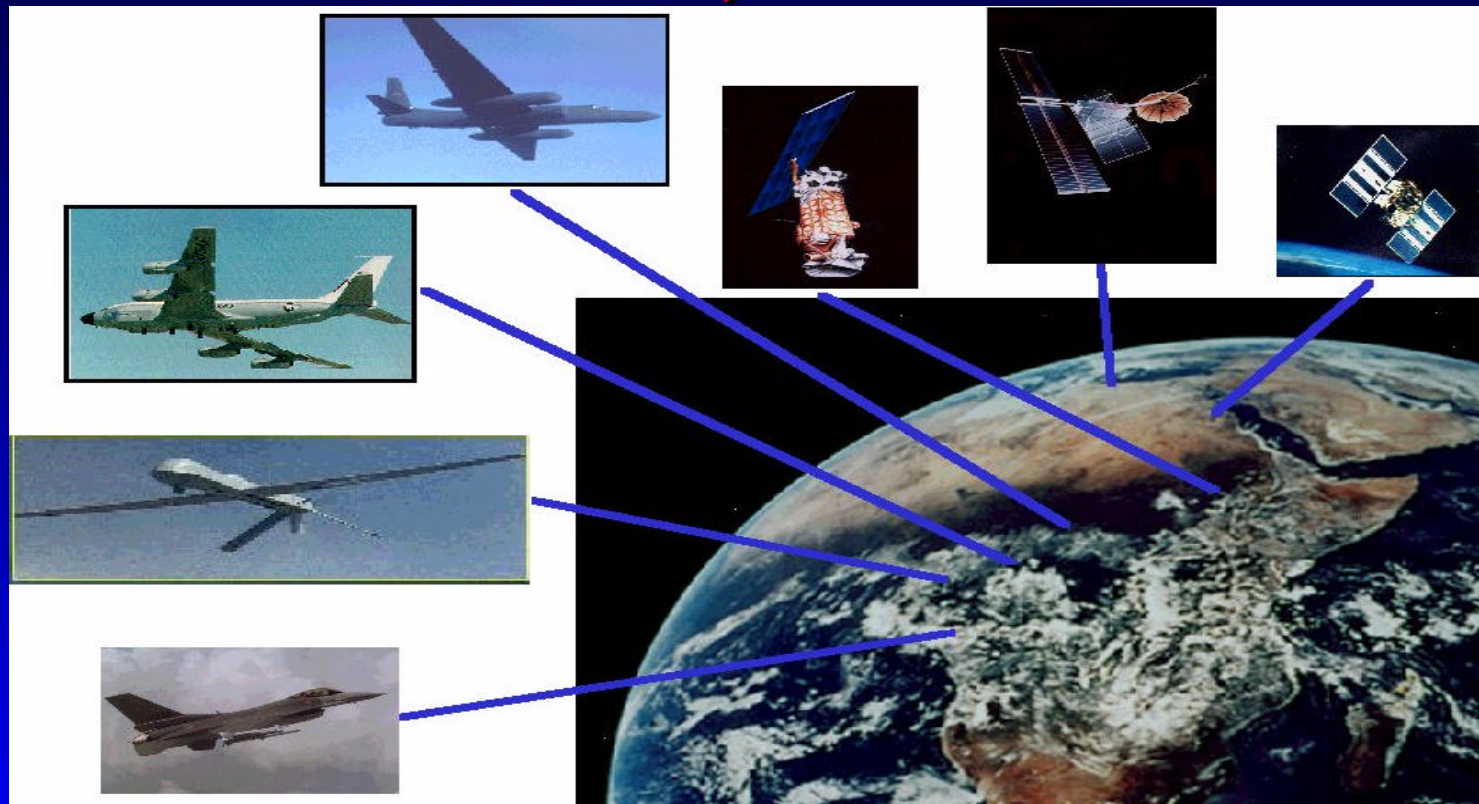


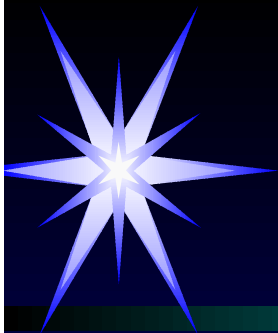
Find the Targets:

Information Superiority

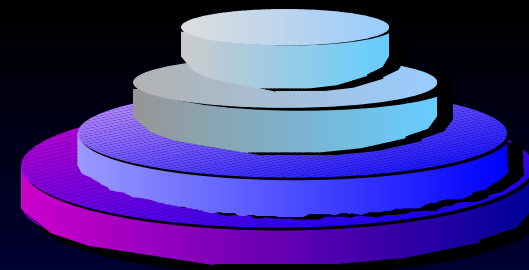


“If It Moves, We’ll See It”

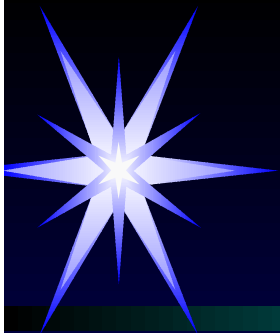




Engage Decisively: Precision Engagement

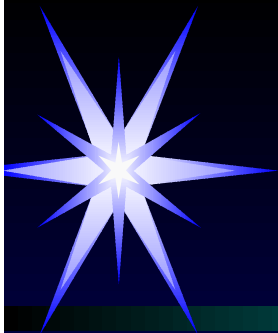


Hold High Value Targets at Risk Day 1



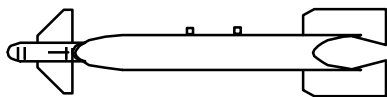
Today's PGM Inventory

- **Heavy Reliance on Laser Guided Munitions**
 - **Limited Standoff**
 - **Requirement for Man In The Loop (MITL)**
- **Long Range Targets Attacked With CALCM**
 - **Limited Number of Weapons**
 - **Single Delivery Platform**
- **Standoff Requirement Met by AGM-130**
 - **Limited Number of Weapons**
 - **Requirement for MITL**
- **High Speed Anti-Radiation Missile (HARM) for SEAD**



Laser Guided Munitions

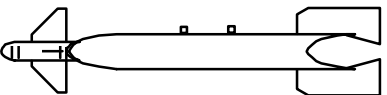
Laser Guidance; Precision; Mk-82, Mk-84, and BLU-109 warheads



GBU-10/12

- Platform F-15E, F-16, F-117
- Quantity Inventory: 33,000
- Flyaway cost (FY95\$) \$22K - \$30K

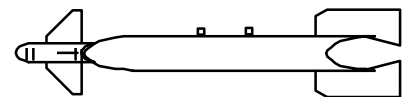
Laser Guidance; Precision; Mk-84 and BLU-109 warheads



GBU-24

- Platform F-15E, F-16
- Quantity Inventory: 10,000 Planned Buy: 4900
- Flyaway cost (FY95\$) \$56K - \$60K

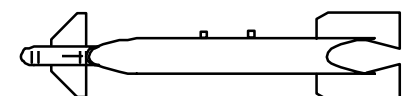
Laser Guidance; Precision; BLU-109 Hard Target Penetrator warhead only



GBU-27

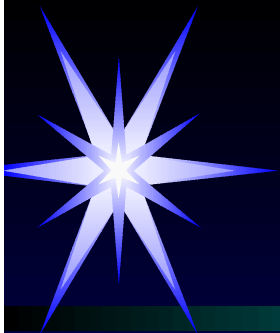
- Platform F-117
- Quantity Inventory: 2600 Planned Buy: 500
- Flyaway cost (FY95\$) \$58K

Laser Guidance; Precision; BLU-113 Hard Target Kill (5000 lb penetrator)



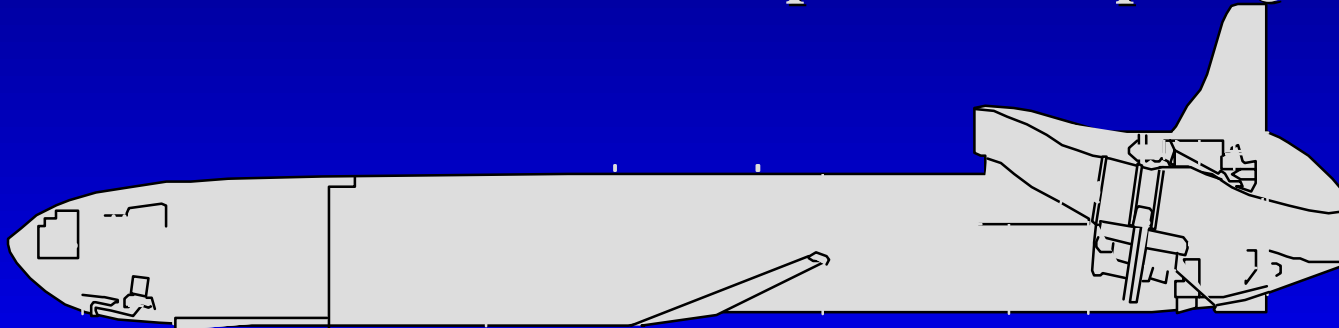
GBU-28

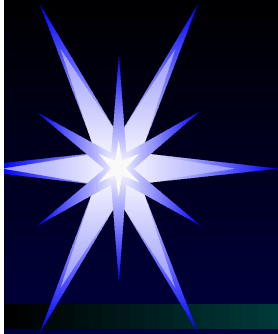
- Platform F-15E
- Quantity Inventory: ~100 Planned Buy: ~300
- Flyaway cost (FY95\$) \$91K



AGM-86 CALCM

- Precision Accuracy With Standoff Greater Than 500nm
- Recent CALCM Employment in SWA and the Balkans Very Effective
 - Over 90% of the Weapons Launched Were Successful
- Launched From B-52 Platform Only
- Current Initiative to Replenish Weapon Quantities



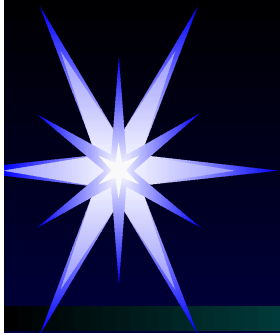


AGM-130 Standoff Attack Weapon



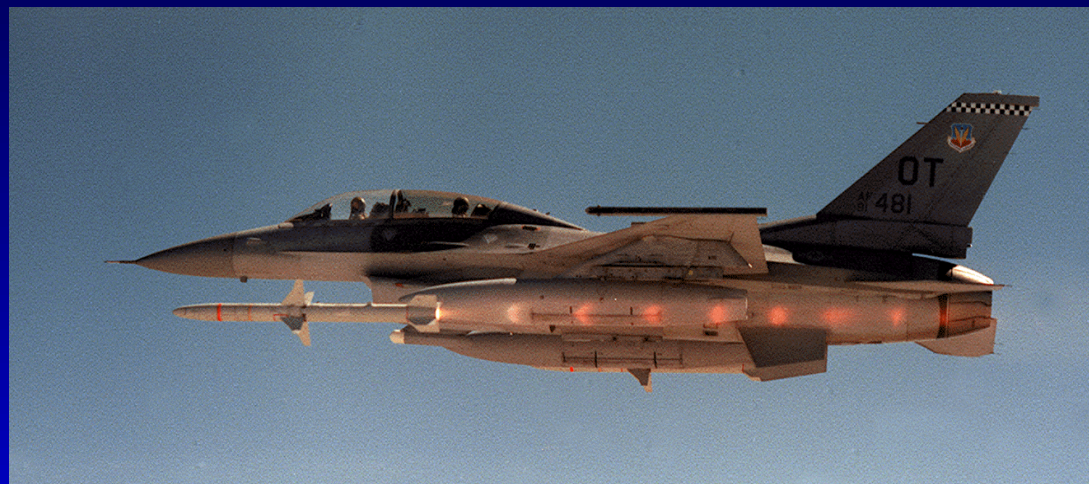
* First Combat Launch of AGM-130 on 11 January in Post Desert Fox Contingencies. Air Force pleased with Weapon Function.

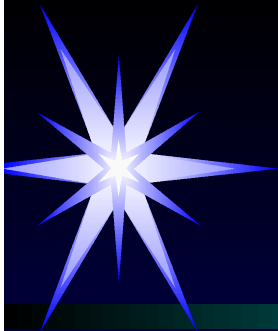
- Rocket Powered Standoff Precision Guided Missile
- Autonomous INS/GPS Mid-course Guidance Provides Adverse Weather Capability
 - Uses TV or IR Terminal Seeker
- 2,000 Pound General Purpose or Penetrator Warheads
- Provides Only Fielded Air Force Standoff Outside Point Defense Weapon With a 2,000 Pound Warhead
- Integrated on the F-15E Strike Eagle



AGM-88 HARM

- **Tactical Anti-Radiation Missile Used to Destroy or Suppress Radar Threats at Standoff Ranges**
- **Air Force's Only Destructive SEAD Weapon**
- **Mature, Joint Program (Navy/Air Force)**
- **Current Inventory Block III And Block IV Missiles**
- **Block V Missile Software Modification**
 - **Significant Improvement in Countering Improving Threat**
 - **Limited Geo-specificity**
 - **Some Home on Jam Capability**





PGM Use Comparison

Vietnam

PGM use: 0.2 %

Desert Storm

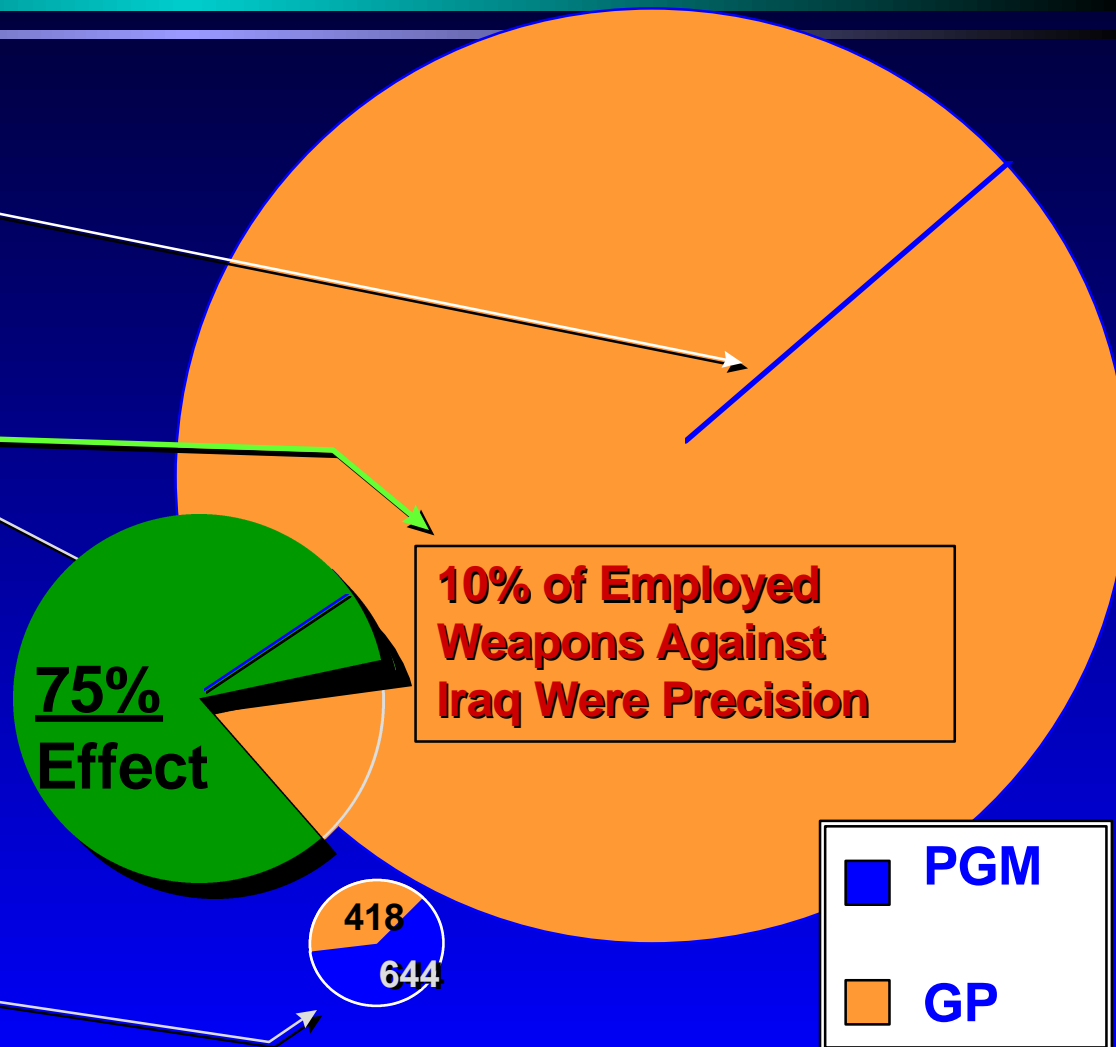
PGM use: 10 %

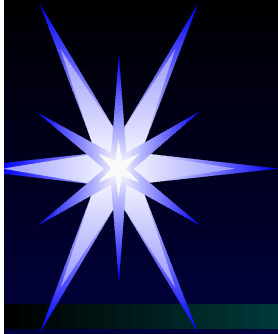
Effected: 75% targets
were destroyed by
precision weapons

Deliberate Force

PGM use: 61%

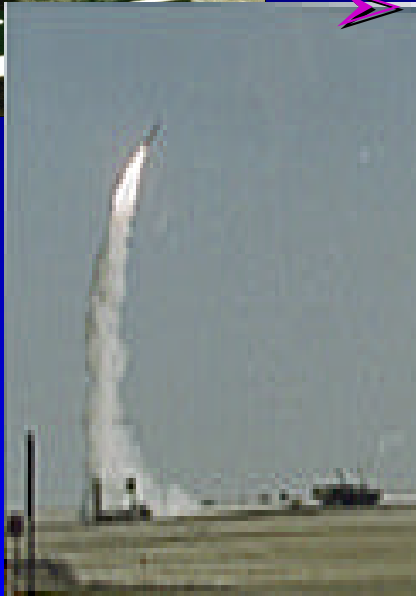
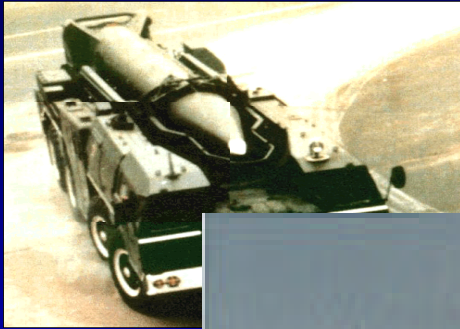
- 87% US
- 13% Coalition

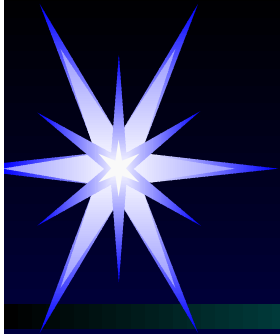




Challenges in Next 10 Years ... Precision Engagement

- Increased Sophistication of Theater Defenses
 - Hybrid SAM/C2 Integration
 - Expanded Area Coverage
- Hardened & Concealed Targets
 - Highly Mobile Targets





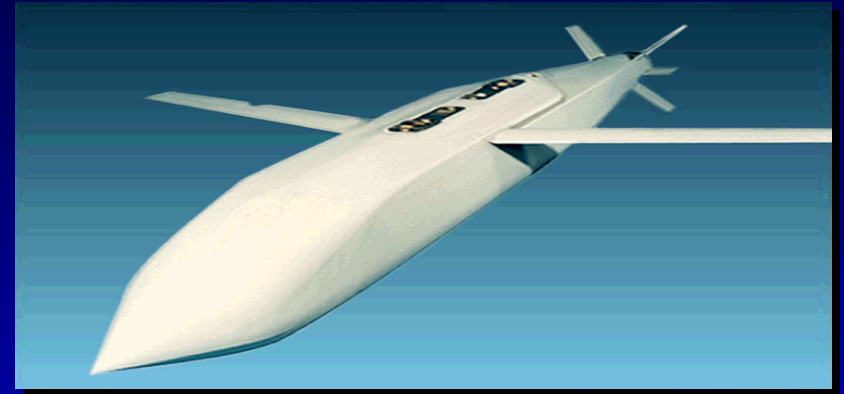
The Answers ... Current Standoff Capability

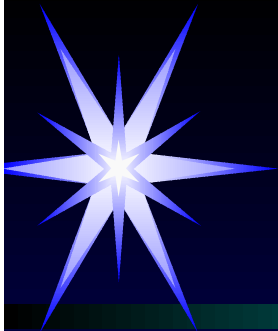
Joint Stand Off Weapon (JSOW)

AGM-130 Standoff Weapon

AGM-142 Havenap

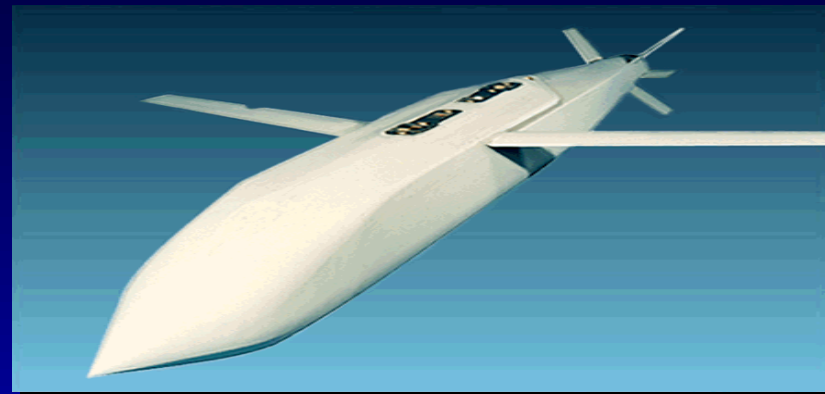
AGM-86 CALCM





Joint Standoff Weapon (JSOW)

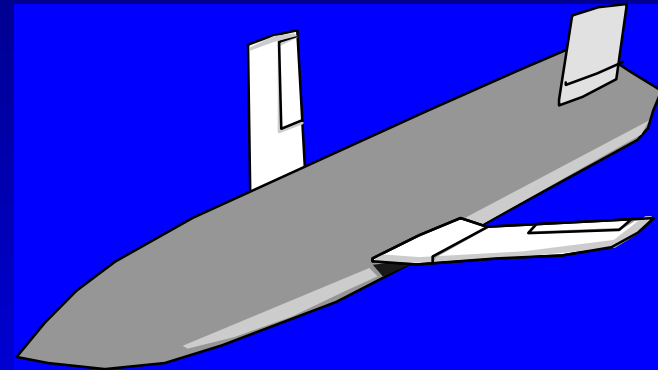
- **Joint Program With Navy Lead**
- **AF Plans to Procure CEM & BLU-108 Anti-Armor Variants**
- **Standoff Outside Point Defenses With Day/Night and Adverse Weather Capability**
- **Anti-Armor Variant Integrates SFW's Preplanned Product Improvement**
- **Multiple Kills Per Pass Against Combat Vehicles**
- **INS/GPS Guidance Only (No Terminal Seeker)**



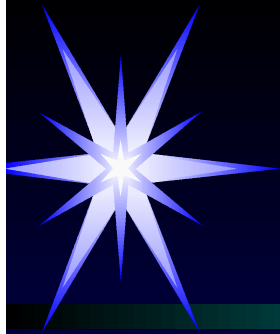


The Answers ... Joint Air Surface Standoff Missile

- Precision Standoff for Fighters and Bombers
- Target Set; Critical, High Value, Highly Defended, Time Sensitive
- Required to Survive Expected Threat Environments Beyond 2010
- Operational by 2001
- Affordable <\$400K



Lockheed Martin AGM-158
JASSM



The Answers ...

Direct Attack -- One Pass Multi-Kill

**Joint Direct Attack
Munition (JDAM)**



**Wind Corrected
Munitions
Dispenser (WCMD)**

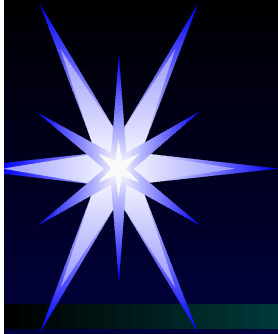


**Sensor Fuzed
Weapon (SFW)**



**Enhanced Laser
Guided Bombs
(GPS LGBs)**





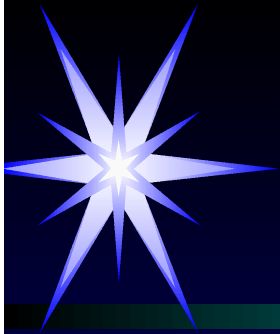
Joint Direct Attack Munition (JDAM)



- 13m CEP W/GPS and INS
- 30m CEP W/INS Only
- Adverse Weather Capability
- In Flight Captive Carriage Retargeting
- Aircraft: B-1, B-2, B-52, F-15, F-16, F-22, F-117



- 
- First Operational Drop From B-2
Balkans - Mar 24



Future Possibilities ... Hypersonics

➤ Affordable Rapid Response Missile Demonstrator

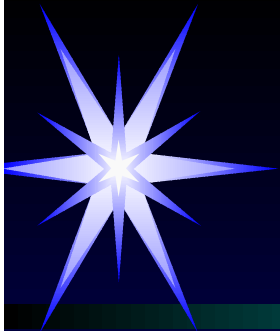
➤ Follow-on to JASSM (post-2010)

➤ More Speed

➤ More Range

➤ Broader Target Set





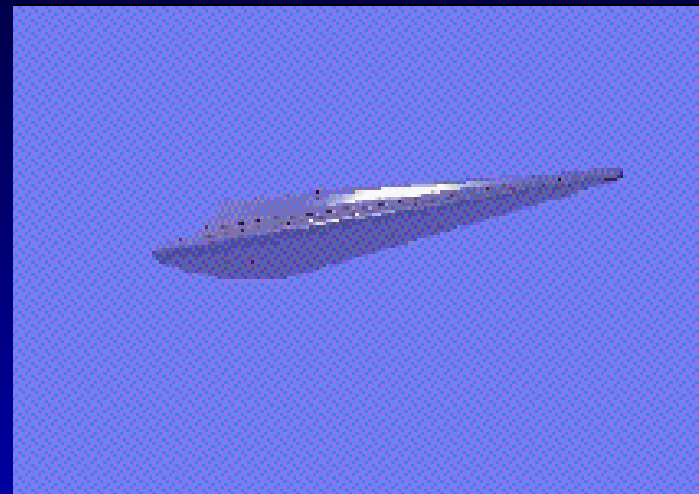
Future Possibilities ...

Common Aerial Vehicle (CAV)

- **OBJECTIVE**: deterrence by power projection and conducting combat operations characterized by rapid response and a high probability of success

- **REQUIRED CAPABILITIES**

- Rapid Response
- Global Reach (Standoff)
- Lethality
- Survivability
 - Platform
 - Weapon
- Adverse Weather



Space-based Launch Platform
Hypersonic Cruise Vehicle
Military Spaceplane
Ballistic Missile



The Challenges ...

Short Dwell and Hard / Deep Targets

Weapons of Mass Destruction

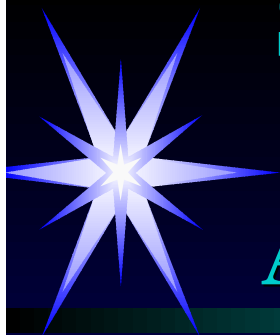
Highly Mobile Targets

- Armor
- Air Defense
- Surface to Surface Missile

Hard & Deeply Buried

- Command
- And Control
- POL
- Buried Production

Affordable Solutions Urgently Needed



Solution For Defeating Time Critical Targets

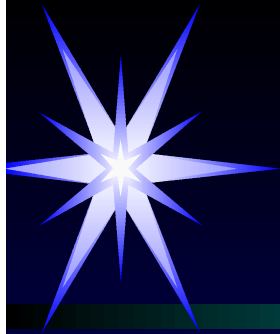
Automatic Target Recognition (ATR)



- **Objective**
 - Provide an affordable standoff miniature munition to automatically search, detect, identify, attack and destroy TMD, SEAD and ground mobile targets of military interest



- **Technology**
 - Solid state LADAR**
 - Automatic Target Recognition**
 - Multi-mode Warhead**
 - Powered Small Air Frame**
- **Acquisition Strategy**
 - Compete ATD**
 - Two contractors for PDR&R**
 - Compete EMD**



The Answers ...

Hard & Deeply Buried Target Defeat

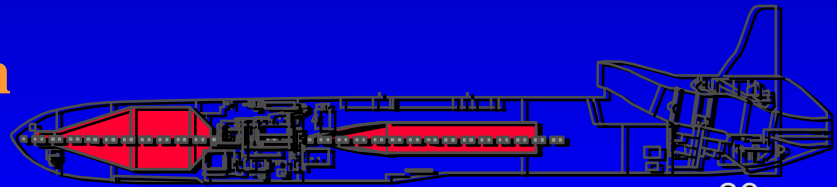
Hard Target Void Sensing
Smart Fuse Test

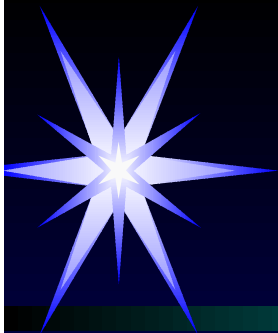


- **Direct Attack**
 - **Free Fall Weapons**
 - **Boosted Penetrators**
 - **GBU-28 5000# Class Weapon**
- **Cruise Missiles**
 - **Large Payload Cruise Missiles,**
 - **Small Payload Cruise Missiles**
 - **Supersonic Cruise Missiles**

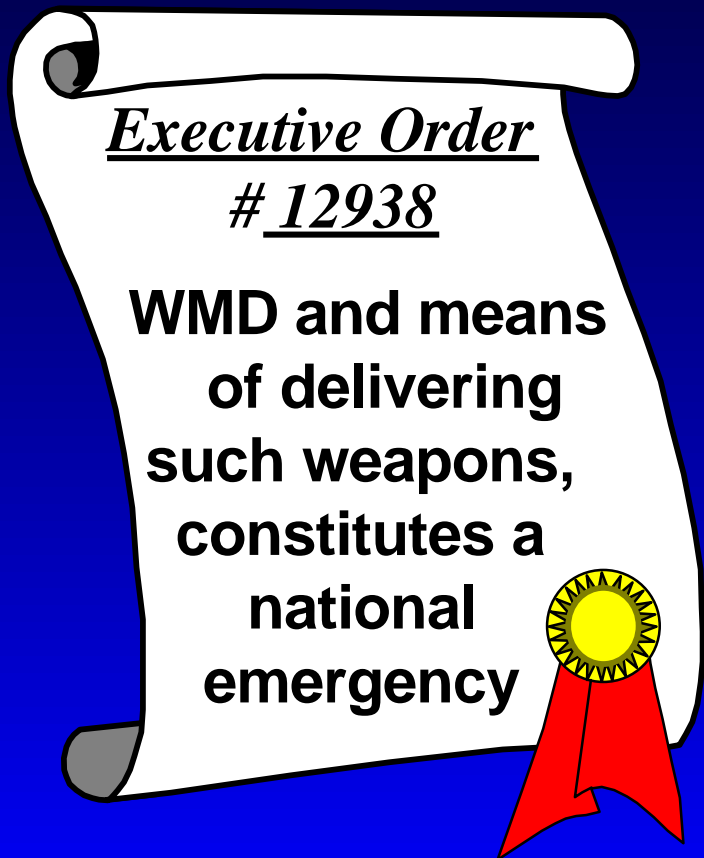
CALCM Developmental Efforts May Yield a Penetrator Capability

- **Range: Greater than 500 nm**
- **Accuracy: Precision**
- **Steep terminal dive**





The Answers ... Agent Defeat Weapon



- **Program Objective:**
**Provide Warfighting
Capability to Defeat,
Neutralize, or Deny Access
to BW and CW Agents and
Weapons with Minimum
Collateral Damage**
- **In Concept Development,
(Phase 0)**



FULL SPECTRUM DOMINANCE



Air Force Tactical Missile Requirements